

a) an anode compartment,
b) a cathode compartment, and
c) a proton-conducting membrane which separates said anode compartment from said cathode compartment and is capable of allowing water to pass;

2) a cathode circuit in which said cathode compartment is disposed, said cathode circuit further including a cathode feeder for delivering oxygen-containing gas to said cathode compartment; and

3) an anode circuit in which said anode compartment is disposed, said anode circuit further including a gas separator, and an anode feeder for delivering a liquid coolant/fuel mixture to said anode compartment, whereby cooling in the anode circuit is effected by evaporation of liquid coolant that passes through said membrane from the anode compartment into the cathode compartment; and

4) means for setting and maintaining a desired operating temperature in said fuel cell by adjusting at least one of pressure in said cathode compartment, and a rate of delivery of the liquid coolant/fuel mixture to said anode compartment.

only air can flow

for now

21. (Amended) A method of operating a fuel cell system having at least one fuel cell which includes an anode compartment and a cathode compartment which are separated from one another by a proton-conducting membrane, and an anode feeder for delivering a liquid coolant/fuel mixture to the anode compartment, comprising:

setting the operating temperature of the fuel cell by controlling one of pressure of the cathode compartment and volume flow of the coolant/fuel mixture into the anode compartment;

passing water through the proton-conducting membrane from the anode compartment into the cathode compartment; and

cooling the coolant/fuel mixture in the anode compartment.

23. (Amended) A method of controlling an operating temperature of a fuel cell system having at least one fuel cell that includes an anode compartment and a cathode compartment which are separated from one another by a proton-conducting membrane, and an anode feeder for delivering a liquid coolant/fuel mixture to the anode compartment, comprising:

passing coolant through the proton-conducting membrane from the anode compartment into the cathode compartment;

evaporating the coolant passing into the cathode compartment, whereby the evaporation of the water cools the coolant/fuel mixture in the anode compartment; and

setting and maintaining a desired operating temperature in said fuel cell system by adjusting at least one of a flow rate of the liquid coolant/fuel mixture, and pressure in the cathode compartment.

(Applicant's Remarks are set forth hereinbelow, starting on the following page.)